

IN THE CLAIMS:

Sub C1 13. (AMENDED) A method for encapsulating a solder joint between an integrated circuit chip and a substrate, comprising the steps of:

B9 forming a composition comprising a cyanate ester, a photoinitiator, and dispersed filler, wherein the filler has been treated with a surface treating agent;

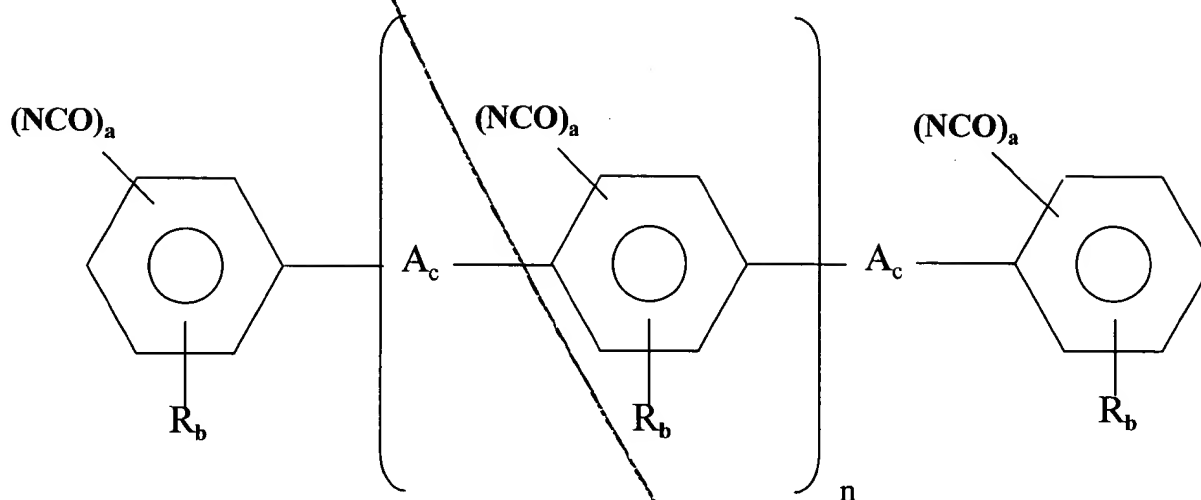
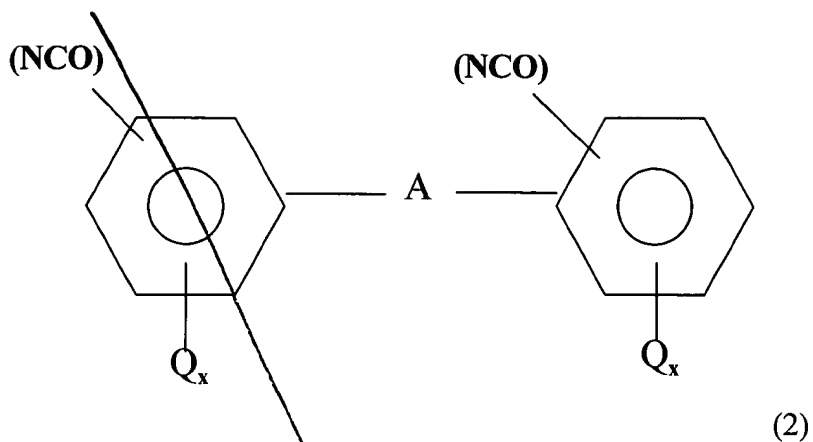
applying an amount of the composition at a thickness sufficient to cover substantially all of the solder joint; and

photocuring the composition to reinforce the solder joint.

14. The method of claim 13, wherein the cyanate ester includes at least two cyanate groups and is curable through cyclotrimerization.

Sub C2 15. (AMENDED) The method of claim 13, wherein the cyanate ester is selected from the group consisting of compounds depicted by formulas 1 and 2:

(1)



wherein each a and b independently include integers from 0 to 3, and at least one a is not 0;

wherein c includes integers from 0 to 1; wherein n includes integers from 0 to 8; wherein each R

is independently selected from the group consisting of C₁₋₆ alkyl, aryl, C₁₋₆ alkaryl, heteroatomic,

heterocyclic, carbonyloxy, carboxy, hydrogen, C₁₋₆ alkoxy, C₁₋₆ alkenyloxy, propargyloxy,

allyloxy, halogen, maleimidyl, glycidyloxy and combinations thereof; wherein x includes integers

from 0 to 4; wherein each Q is independently selected from the group consisting of hydrogen, halogens, C₁₋₉ alkyl; and wherein A is selected from the group consisting of C₁₋₁₂ polymethylene, CH₂, dicyclopentadienyl, aralkyl, aryl, cycloaliphatic, CH(CH₃), SO₂, O, C(CF₃)₂, CH₂OCH₂, (CH₂S)_{x=(integers from 0 to [9])}, (CH₂NH)_{x=(integers from 0 to 9)}, CH₂SCH₂, CH₂NHCH₂, S, C(=O), OC(=O), OCOO, S(=O), OP(=O), OP(=O)(=O)O, alkylene radicals, C(CH₃)₂, and combinations thereof.

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16. (AMENDED) The method of claim 13, wherein the cyanate ester is selected from the group consisting of cyanatobenzene 1,3-and 1,4-dicyanatobenzene, 2-tert-butyl-1,4-dicyanatobenzene, 2,4-dimethyl-1,3-dicyanatobenzene, 2,5-di-tert-butyl-1,4-dicyanatobenzene, tetramethyl-1,4-dicyanatobenzene, 4-chloro-1,3-dicyanatobenzene, 1,3,5-tricyanatobenzene, 2,2' 4,4'-dicyanobiphenyl, 3,3',5,5'-tetramethyl-4,4'dicyanobiphenyl, 1,3-dicyanatonaphthalene, 1,4-dicyanatonaphthalene, 1,5-dicyanatonaphthalene, 1,6-dicyanatonaphthalene, 1,8-dicyanatonaphthalene, 2,6-dicyanatonaphthalene, 2,7-dicyanatonaphthalene, 1,3,6-tricyanatonaphthalene, bis(4- cyanatophenyl)methane, bis(3-chloro-4-cyanatophenyl)methane, 2,2-bis(4-cyanatophenyl)propane, 2,2-bis(3,5-dichloro-4-cyanatophenyl)propane, 2,2-bis(3,5-dibromo-4- cyanatophenyl)propane, bis (4-cyanatophenyl)ether, bis (p-cyanophenoxyphenoxy)-benzene, di(4-cyanatophenyl)ketone, bis(4-cyanatophenyl)thioether, bis(4-cyanatophenyl)sulfone, tris (4-cyanatophenyl)phosphite, tris(4-cyanatophenyl)phosphate and combinations thereof.

17. The method of claim 13, wherein the photoinitiator is selected from the group

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consisting of aryldiazonium, triphenylsulfonium, diphenyliodonium, diaryliodosyl and triarylsulfoxonium salts.

18. The method of claim 13, wherein the composition contains about 40% to about 75% by weight dispersed silica.

19. (AMENDED) The method of claim 13, wherein the dispersed filler includes fused silica and amorphous silica.

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20. (AMENDED) The method of claim 13, wherein a particle size of the dispersed filler is less than or equal to 31 microns [or less].

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21. (AMENDED) The method of claim 13, wherein a coefficient of linear thermal expansion of the cured composition is from about 26 to about 39 ppm/degree C.

22. (AMENDED) The method of claim 13, wherein a glass transition temperature of the cured composition is from about 100 to about 160 degrees C.

23. (AMENDED) The method of claim 13, wherein the composition includes from 1 to 20 parts of surface treating agents selected from the group consisting of vinyltrimethoxysilane, vinyltriethoxysilane, N(2-aminoethyl)3-aminopropylmethyldimethoxysilane, 3-